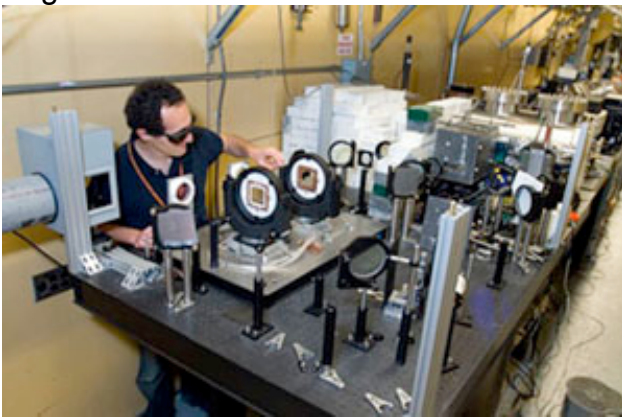


LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: March 31-April 4 , 2008.

Bright future for T-REX



Lab scientist Miro Shverdin, at the output end of the T-REX machine.

When it comes to laser-based light sources, few are brighter than T-REX. Technically known as the Thomson-Radiated Extreme X-ray Source, the Lab's T-REX is an advanced, laser-based light source in which novel, energetic, picosecond laser pulses are scattered to produce monochromatic, tunable X-rays and gamma-rays.

The system will be able to study isotopes, allowing researchers to address challenges in homeland and international security, nonproliferation, advanced nuclear power systems and nuclear waste identification.

For more information, see

https://newsline.llnl.gov/articles/2008/apr/04.04.08_TREX.php

LLNL ranked one of best places for postdocs



The Laboratory is ranked in the top 25 national institutes as one of the best places to work for postdocs, according to an international poll conducted by The Scientist magazine. Livermore was ranked 24 for having strong benefits, pay and compensation.

Institutions ranked included government, academia, industry and private companies. The survey tabulated 3,086 “usable responses” from 44 questions offered to the magazine’s postdoc audience. Categories included the quality of training and mentoring, career development opportunities, quality of communication, networking opportunities, value of the postdoc experience, quality of facilities and infrastructure, funding, equity, pay and compensation, benefits and family and personal life.

For more, see <http://www.the-scientist.com/2008/3/1/53/1/>

Supercomputers create super models



The Lab’s Thunder supercomputer was used for climate simulations.

Using state-of-the-art supercomputers, Laboratory climate scientists have performed a 400-year high-resolution global ocean-atmosphere simulation with results that are more similar to actual observations of surface winds and sea surface temperatures.

The research, led by LLNL atmospheric scientist Govindasamy Bala, appears in the April 1 edition of the Journal of Climate, as well as the April 2 edition of Science Daily.

The researchers used the Community Climate System Model (CCSM), which is sponsored by the National Science Foundation and Department of Energy. CCSM is a global ocean-atmosphere modeling framework designed to simulate the climate of Earth.

For more, see the Science Daily article at <http://www.sciencedaily.com/releases/2008/04/080402084336.htm> or https://publicaffairs.llnl.gov/news/news_releases/2008/NR-08-04-01.html

New partnership to produce hydrogen fuel storage technology



Vern Switzer (left) and Tim Ross check the pressure on the inner vessel that holds hydrogen of any temperature.

Lawrence Livermore National Laboratory is working with Quantum Fuel Systems Technologies to develop the next-generation manufacturing technology for hydrogen storage tanks. As part of a \$5.6 million, three-year contract with the Department of Energy, Livermore researchers will demonstrate a unique composite processing technique.

Hydrogen pressure vessels are typically made by winding carbon fiber wetted in adhesive around a liner made of either plastic or metal. LLNL has developed a dry tape winding process that considerably reduces the time required for pressure vessel winding -- 15 minutes vs. three hours for wet winding.

For more, see https://publicaffairs.llnl.gov/news/news_releases/2008/NR-08-03-08.html

Everything you need to know about aerogel



Alex Gash gives a lesson on aerogels.

More than 99 percent of its volume is empty space, yet it provides more insulation than any of its fiberglass counterparts.

Called aerogel, it looks more like frozen smoke, and it is the lightest solid material on the planet.

KQED TV (PBS; channel 9 in the Bay Area) recently tapped Lab scientist and aerogel researcher Alex Gash to provide a primer on this remarkable substance, for its weekly “Quest” science and education series. To see Gash’s report, check out the Quest Website at <http://www.kqed.org/quest/television/view/776>

“Quest” returns to the Lab on April 15, 7:30 p.m., when it presents a segment on the National Ignition Facility.

LLNL/UC Davis article recognized as “most-accessed”

THE MOST

A joint LLNL and UC Davis journal article, “On-Chip, Real-Time, Single-Copy Polymerase Chain Reaction in Picoliter Droplets,” published in Analytical Chemistry, is featured on the American Chemical Society (ACS) Publication’s Website, http://pubs.acs.org/journals/promo/most/most_accessed/index.html, as one of the “20 Most-Accessed Articles” for the fourth-quarter of 2007.

ACS Publications provides listings of the most highly ranked research articles in four categories, updated on a regular basis. “Most-Cited Articles” are based on data from the Thomson Scientific Web of Science.

In their Analytical Chemistry paper, <http://pubs.acs.org/cgi-bin/article.cgi/ancham/2007/79/i22/html/ac701809w.html>, Lab scientists N.

Reginald Beer, Ben Hindson, et al. concluded: "We have demonstrated a 6 order of magnitude reactor size reduction from commercial real-time PCR systems..."

LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail labreport@llnl.gov.